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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/681,216	10/09/2003	Yasuyuki Arai	740756-2652	8342

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EXAMINER	
RICHARDS, N DREW	

ART UNIT	PAPER NUMBER
2815	

DATE MAILED: 04/22/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/681,216	ARAI ET AL.	
	Examiner	Art Unit	
	N. Drew Richards	2815	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *17 February 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,2,4-8,10-14,16-20 and 22-33* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,2,4-8,10-14,16-20 and 22-33* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *17 February 2005* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☒ Certified copies of the priority documents have been received in Application No. 10/155,971.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Objections

1. Claim 1 is objected to because of the following informalities: claim 1 line 9 should read "top surface **of**". Appropriate correction is required.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1, 2, 4-8, 10-14, 16-20 and 22-33 are rejected under 35 U.S.C. 102(e) as being anticipated by Ishihara et al. (U.S. Patent No. 6,300,988 B1).

Ishihara et al. disclose an organic semiconductor device using an organic thin film transistor in figures 1(A)-7(C) and on columns 1-12 of their specification. Specifically, Ishihara et al. disclose in figure 1(A) and on column 5 lines 44-63:

a first electrode 102 formed in contact with an insulated surface (electrode 102 is shown on the surface of glass (insulated) substrate 101);

a first insulated film 103 formed in contact with the first electrode 102;

a second insulated film 106 formed in contact with the first insulated film 103, having an opening part at a position superimposed on the first electrode 102 (second

insulated film 106 is shown with an opening in the central area of figure 1(A) that can be seen aligned over the first electrode 102);

an organic semiconductor film 107/108 formed in the opening part, and a second electrode 104 and third electrode 105 formed in contact with the organic semiconductor film 107 (portion 107 of organic film 107/108 is formed in the opening part with the second electrode 104 and third electrode 105 contacting the edges of organic film 107);

wherein a top surface of the organic semiconductor film 107/108 is in alignment with a top surface of the second insulated film 106 (portion 108 of organic semiconductor film 107/108 is formed directly on the second insulated film 106 and thus the top surfaces thereof are "in alignment", that is the top surface of insulated film 106 and the top surface of portion 108 are "in alignment" since they share the same contours).

With regard to claim 2, Ishihara et al. do not explicitly disclose that the organic semiconductor film is made of a soluble organic semiconductor material. Nonetheless, this limitation is implicitly disclosed as Ishihara et al. teaches the use of various organic materials that are inherently soluble. Ishihara et al. do disclose on column 4 lines 24-29 a variety of organic materials that may be used including pentacene. Pentacene is soluble and thus Ishihara et al. disclose the use of a soluble organic semiconductor material.

With regard to claim 4, the second electrode 104 and third electrode 105 are made of the same metal having a large work function (column 6 lines 38-45 teach the

second and third electrodes being formed on the same metal; the metal used in the same as in the instant invention and thus reads on "having a large work function").

With regard to claim 5, the second electrode 104 and third electrode 105 comprise a metal selected from the group consisting of gold, platinum, chromium, palladium, aluminum, indium, molybdenum and nickel (disclosed as chromium, molybdenum, and gold on column 6 lines 38-45).

With regard to claim 6, the organic semiconductor device is disclosed as being incorporated into one of the group claimed, specifically a display device (see figures 5 and 6).

With regard to claim 7, Ishihara et al. disclose in figure 1(A) and on column 5 lines 44-63:

a first electrode 102 formed in contact with an insulated surface (electrode 102 is shown on the surface of glass (insulated) substrate 101);

a first insulated film 103 formed in contact with the first electrode 102;

a second insulated film 106 formed in contact with the first insulated film 103, having an opening part at a position superimposed on the first electrode 102 (second insulated film 106 is shown with an opening in the central area of figure 1(A) that can be seen aligned over the first electrode 102);

an organic semiconductor film 107/108 formed in the opening part, and a second electrode 104 and third electrode 105 formed in contact with the organic semiconductor film 107 and the second insulating film 106 (portion 107 of organic film 107/108 is

formed in the opening part with the second electrode 104 and third electrode 105 contacting the edges of organic film 107);

wherein a top surface of the organic semiconductor film 107/108 is in alignment with that of the second insulated film 106 (portion 108 of organic semiconductor film 107/108 is formed directly on the second insulated film 106 and thus the top surfaces thereof are "in alignment", that is the top surface of insulated film 106 and the top surface of portion 108 are "in alignment" since they share the same contours),

wherein the second electrode 104 and the third electrode 105 are formed without contact with each other.

With regard to claim 8, Ishihara et al. do not explicitly disclose that the organic semiconductor film is made of a soluble organic semiconductor material. Nonetheless, this limitation is implicitly disclosed as Ishihara et al. teaches the use of various organic materials that are inherently soluble. Ishihara et al. do disclose on column 4 lines 24-29 a variety of organic materials that may be used including pentacene. Pentacene is soluble and thus Ishihara et al. disclose the use of a soluble organic semiconductor material.

With regard to claim 10, the second electrode 104 and third electrode 105 are made of the same metal having a large work function (column 6 lines 38-45 teach the second and third electrodes being formed on the same metal; the metal used in the same as in the instant invention and thus reads on "having a large work function").

With regard to claim 11, the second electrode 104 and third electrode 105 comprise a metal selected from the group consisting of gold, platinum, chromium,

palladium, aluminum, indium, molybdenum and nickel (disclosed as chromium, molybdenum, and gold on column 6 lines 38-45).

With regard to claim 12, the organic semiconductor device is disclosed as being incorporated into one of the group claimed, specifically a display device (see figures 5 and 6).

With regard to claim 13, Ishihara et al. disclose in figure 1(A) and on column 5 lines 44-63:

a first electrode 102 formed in contact with an insulated surface (electrode 102 is shown on the surface of glass (insulated) substrate 101);

a first insulated film 103 formed in contact with the first electrode 102;

a second insulated film 106 formed in contact with the first insulated film 103, having an opening part at a position superimposed on the first electrode 102 (second insulated film 106 is shown with an opening in the central area of figure 1(A) that can be seen aligned over the first electrode 102);

an organic semiconductor film 107/108 formed in the opening part, and a second electrode 104 and third electrode 105 formed in contact with the organic semiconductor film 107 (portion 107 of organic film 107/108 is formed in the opening part with the second electrode 104 and third electrode 105 contacting the edges of organic film 107);

wherein a top surface of the organic semiconductor film 107/108 is in alignment with that of the second insulated film 106 (portion 108 of organic semiconductor film 107/108 is formed directly on the second insulated film 106 and thus the top surfaces

thereof are "in alignment", that is the top surface of insulated film 106 and the top surface of portion 108 are "in alignment" since they share the same contours),

wherein the second insulated film has a tapered rim (second insulated film 106 in figure 1(A) is considered to have a "rim" that is seen on either side of opening, this rim tapers down away from the opening).

With regard to claim 14, Ishihara et al. do not explicitly disclose that the organic semiconductor film is made of a soluble organic semiconductor material. Nonetheless, this limitation is implicitly disclosed as Ishihara et al. teaches the use of various organic materials that are inherently soluble. Ishihara et al. do disclose on column 4 lines 24-29 a variety of organic materials that may be used including pentacene. Pentacene is soluble and thus Ishihara et al. disclose the use of a soluble organic semiconductor material.

With regard to claim 16, the second electrode 104 and third electrode 105 are made of the same metal having a large work function (column 6 lines 38-45 teach the second and third electrodes being formed on the same metal; the metal used in the same as in the instant invention and thus reads on "having a large work function").

With regard to claim 17, the second electrode 104 and third electrode 105 comprise a metal selected from the group consisting of gold, platinum, chromium, palladium, aluminum, indium, molybdenum and nickel (disclosed as chromium, molybdenum, and gold on column 6 lines 38-45).

With regard to claim 18, the organic semiconductor device is disclosed as being incorporated into one of the group claimed, specifically a display device (see figures 5 and 6).

With regard to claim 19, Ishihara et al. disclose in figure 1(A) and on column 5 lines 44-63:

a first electrode 102 formed in contact with an insulated surface (electrode 102 is shown on the surface of glass (insulated) substrate 101);

a first insulated film 103 formed in contact with the first electrode 102;

a second insulated film 106 formed in contact with the first insulated film 103, having an opening part at a position superimposed on the first electrode 102 (second insulated film 106 is shown with an opening in the central area of figure 1(A) that can be seen aligned over the first electrode 102);

an organic semiconductor film 107/108 formed in the opening part, and a second electrode 104 and third electrode 105 formed in contact with the organic semiconductor film 107 (portion 107 of organic film 107/108 is formed in the opening part with the second electrode 104 and third electrode 105 contacting the edges of organic film 107);

wherein a top surface of the organic semiconductor film 107/108 is in alignment with that of the second insulated film 106 (portion 108 of organic semiconductor film 107/108 is formed directly on the second insulated film 106 and thus the top surfaces thereof are "in alignment", that is the top surface of insulated film 106 and the top surface of portion 108 are "in alignment" since they share the same contours),

wherein the organic semiconductor film 107/108 is formed in contact with the first insulated film 103 (portion 107 of the organic semiconductor film contacts first insulated film 103).

With regard to claim 20, Ishihara et al. do not explicitly disclose that the organic semiconductor film is made of a soluble organic semiconductor material. Nonetheless, this limitation is implicitly disclosed as Ishihara et al. teaches the use of various organic materials that are inherently soluble. Ishihara et al. do disclose on column 4 lines 24-29 a variety of organic materials that may be used including pentacene. Pentacene is soluble and thus Ishihara et al. disclose the use of a soluble organic semiconductor material.

With regard to claim 22, the second electrode 104 and third electrode 105 are made of the same metal having a large work function (column 6 lines 38-45 teach the second and third electrodes being formed on the same metal; the metal used in the same as in the instant invention and thus reads on "having a large work function").

With regard to claim 23, the second electrode 104 and third electrode 105 comprise a metal selected from the group consisting of gold, platinum, chromium, palladium, aluminum, indium, molybdenum and nickel (disclosed as chromium, molybdenum, and gold on column 6 lines 38-45).

With regard to claim 24, the organic semiconductor device is disclosed as being incorporated into one of the group claimed, specifically a display device (see figures 5 and 6).

With regard to claim 25, Ishihara et al. disclose in figure 1(A) and on column 5 lines 44-63:

a gate electrode 102 provided over a substrate 101;

a gate insulator comprising a first insulating film 103 and a second insulating film 106, the first insulating film 103 provided over the gate electrode 102, the second insulating film 106 provided over the first insulating film 103, the second insulating film 106 provided with an opening part at a position superimposed over the gate electrode 102;

a channel region provided over the gate electrode 102 with the gate insulator therebetween, the channel region provided in an organic semiconductor film 107/108 provided in the opening part;

a source electrode 104 and a drain electrode 105 provided in contact with the organic semiconductor film 107/108;

wherein a top surface of the organic semiconductor film 107/108 is in alignment with a top surface of the second insulating film 106 (portion 108 of organic semiconductor film 107/108 is formed directly on the second insulated film 106 and thus the top surfaces thereof are "in alignment", that is the top surface of insulated film 106 and the top surface of portion 108 are "in alignment" since they share the same contours).

With regard to claim 26, the second electrode 104 and third electrode 105 comprise a metal selected from the group consisting of gold, platinum, chromium,

palladium, aluminum, indium, molybdenum and nickel (disclosed as chromium, molybdenum, and gold on column 6 lines 38-45).

With regard to claim 27, the organic semiconductor device is disclosed as being incorporated into one of the group claimed, specifically a display device (see figures 5 and 6).

With regard to claim 28, Ishihara et al. disclose in figure 1(A) and on column 5 lines 44-63:

a gate electrode 102 provided over a substrate 101;

a gate insulator comprising a first insulating film 103 and a second insulating film 106, the first insulating film 103 provided over the gate electrode 102, the second insulating film 106 provided over the first insulating film 103, the second insulating film 106 provided with an opening part at a position superimposed over the gate electrode 102;

a channel region provided over the gate electrode 102 with the gate insulator therebetween, the channel region provided in an organic semiconductor film 107/108 provided in the opening part;

a source electrode 104 and a drain electrode 105 provided in contact with the organic semiconductor film 107/108;

wherein a top surface of the organic semiconductor film 107/108 is in alignment with that of the second insulated film 106 (portion 108 of organic semiconductor film 107/108 is formed directly on the second insulated film 106 and thus the top surfaces

thereof are "in alignment", that is the top surface of insulated film 106 and the top surface of portion 108 are "in alignment" since they share the same contours),

wherein the second insulated film has a tapered rim (second insulated film 106 in figure 1(A) is considered to have a "rim" that is seen on either side of opening, this rim tapers down away from the opening).

With regard to claim 29, the second electrode 104 and third electrode 105 comprise a metal selected from the group consisting of gold, platinum, chromium, palladium, aluminum, indium, molybdenum and nickel (disclosed as chromium, molybdenum, and gold on column 6 lines 38-45).

With regard to claim 30, the organic semiconductor device is disclosed as being incorporated into one of the group claimed, specifically a display device (see figures 5 and 6).

With regard to claim 31, Ishihara et al. disclose in figure 1(A) and on column 5 lines 44-63:

a gate electrode 102 provided over a substrate 101;

a gate insulator comprising a first insulating film 103 and a second insulating film 106, the first insulating film 103 provided over the gate electrode 102, the second insulating film 106 provided over the first insulating film 103, the second insulating film 106 provided with an opening part at a position superimposed over the gate electrode 102;

a channel region provided over the gate electrode 102 with the gate insulator therebetween, the channel region provided in an organic semiconductor film 107/108 provided in the opening part;

a source electrode 104 and a drain electrode 105 provided in contact with the organic semiconductor film 107/108;

wherein a top surface of the organic semiconductor film 107/108 is in alignment with that of the second insulated film 106 (portion 108 of organic semiconductor film 107/108 is formed directly on the second insulated film 106 and thus the top surfaces thereof are "in alignment", that is the top surface of insulated film 106 and the top surface of portion 108 are "in alignment" since they share the same contours),

wherein the organic semiconductor film 107/108 is formed in contact with the first insulated film 103 (portion 107 of the organic semiconductor film contacts first insulated film 103).

With regard to claim 32, the second electrode 104 and third electrode 105 comprise a metal selected from the group consisting of gold, platinum, chromium, palladium, aluminum, indium, molybdenum and nickel (disclosed as chromium, molybdenum, and gold on column 6 lines 38-45).

With regard to claim 33, the organic semiconductor device is disclosed as being incorporated into one of the group claimed, specifically a display device (see figures 5 and 6).

Response to Arguments

4. Applicant's arguments filed 2/17/05 have been fully considered but they are not persuasive.

Applicant has argued that in Ishihara, since the top surface of organic semiconductor films 107,108,109 are separated from a top surface of the second insulated film 106, the top surfaces are not "in alignment" as claimed. This is not persuasive. The term "in alignment" is a broad term that does not require the surface to be contacting or coplanar. In the case of Ishihara, the top surfaces of 106 and 108 are "in alignment" as they share the same contour and general shape.

Conclusion

5. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to N. Drew Richards whose telephone number is (571) 272-1736. The examiner can normally be reached on Monday-Friday 9:00-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tom Thomas can be reached on (571) 272-1664. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

NDR

TOM THOMAS
SUPERVISORY PATENT EXAMINER